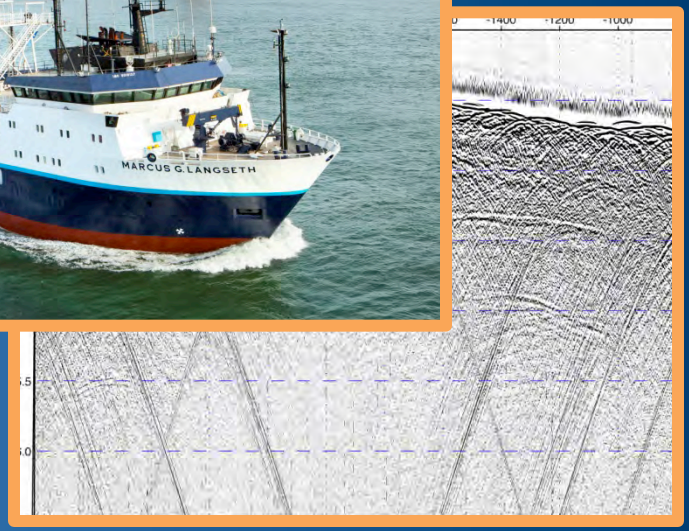
Welcome

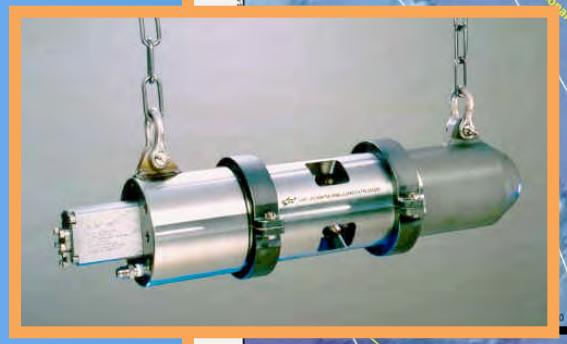
to the NSF Public Hearing for the Draft Environmental Assessment of Marine Geophysical Surveys by the

R/V Marcus G. Langseth for the Southern California Collaborative Offshore Geophysical Survey.

If you would like to make an oral statement for the record during tonight's meeting, please fill out a “Speaker Card” and hand it to an NSF Representative.

Draft Environmental Assessment of Marine Geophysical Survey by the R/V Marcus G. Langseth for the Southern California Collaborative Offshore Geophysical Survey





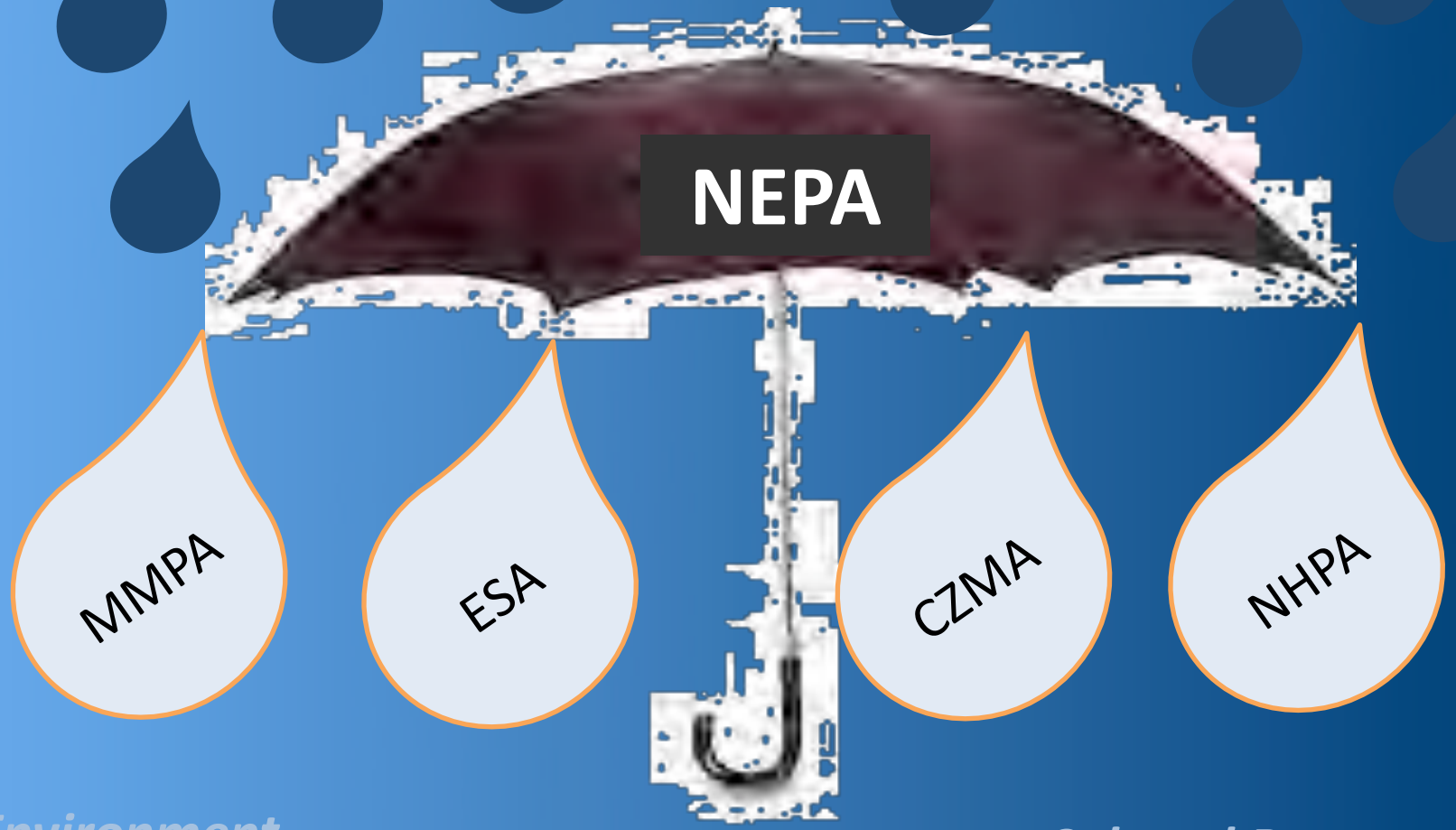
Public Hearing:
San Diego, CA
September 6, 2012

National Science Foundation (NSF)

- NSF is an Independent federal agency, created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense…"
- Funds ~20% of federally supported basic research at U.S. colleges and universities
- Issues ~11,000 grants annually to fund proposals judged by merit-review
- Annual budget of ~$7.0B (FY 2012)
- NSF-funded researchers have won more than 180 Nobel Prizes as well as other honors

NSF
Arlington, VA

What is NEPA?



Environment

Marine Mammals

Endangered Species

Coastal Resources

Cultural Resources

Purpose & Need for the Draft EA

- **Draft EA:** Examines the potential impacts that may result from the proposed Southern California Collaborative Offshore Geophysical Survey
- **Proposed Action:** Use of the NSF owned vessel, R/V Langseth to conduct a 2D High Energy Seismic Survey in the vicinity of the San Onofre Nuclear Generating Station (SONGS)
- **Purpose:** Survey the faults and geologic structures surrounding SONGS


R/V *Langseth*


R/V *Langseth* Main Computer Lab

Project Objectives

- Implement the recommendations of the California Energy Commission Assembly Bill 1632 report and as authorized by the California Public Utilities Commission (PUC);
- Image geometry and architecture of the offshore fault systems;
- Identify targets and focus area(s) for a subsequent 2013 3D geophysical survey;
- Evaluate geologic deformation and structures;
- Generate models of the underlying geologic material to assess areas of active faulting and refine locations of offshore earthquakes near SONGS;
- Provide data to the broader scientific and safety community, and general public; and,
- Determine the need and scope for additional seismic survey data acquisition.

Earthquakes

Landslides

Tsunamis

Proposed Action

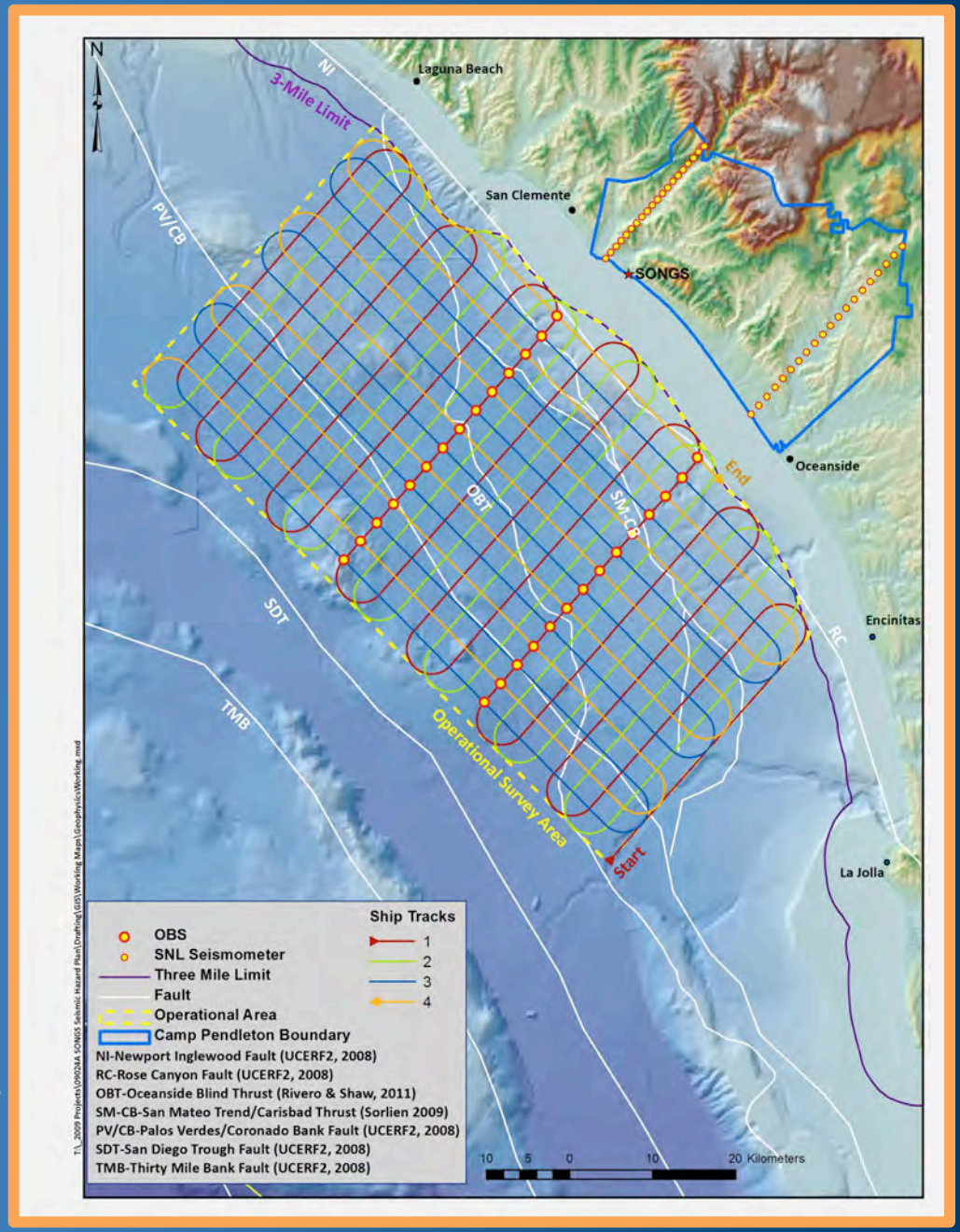
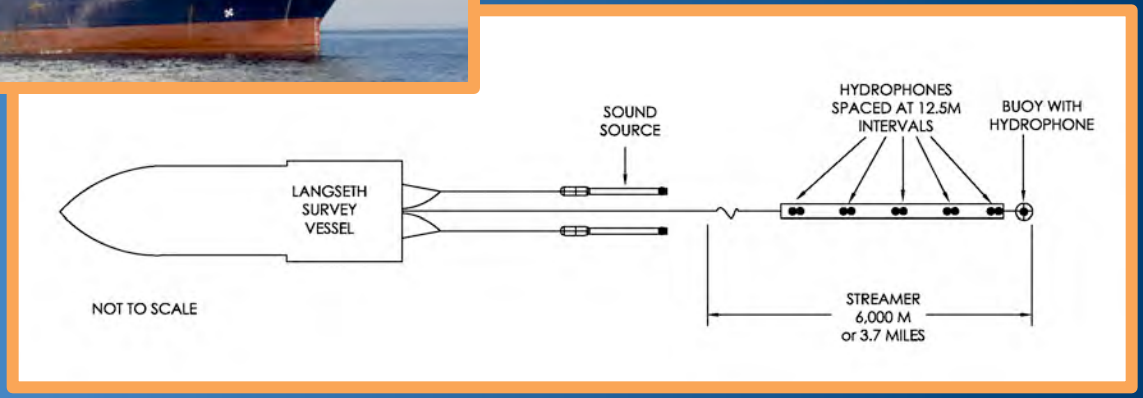


Figure 2-1. Track Map of Proposed 2,200 Line-km 2-D Seismic Survey Offshore SONGS and Temporary Ocean Bottom Seismometer and Onshore Seismometer Unit Locations.

R/V Langseth

- Primary vessel used for seismic surveys
- 2D High Energy Seismic Survey
- 18 airguns operating
- Total air discharge volume = 3300 in^3
- 1 Hydrophone streamer 6 km (3.7 mi) length

R/V *Langseth*



Reflection & Refraction Surveys

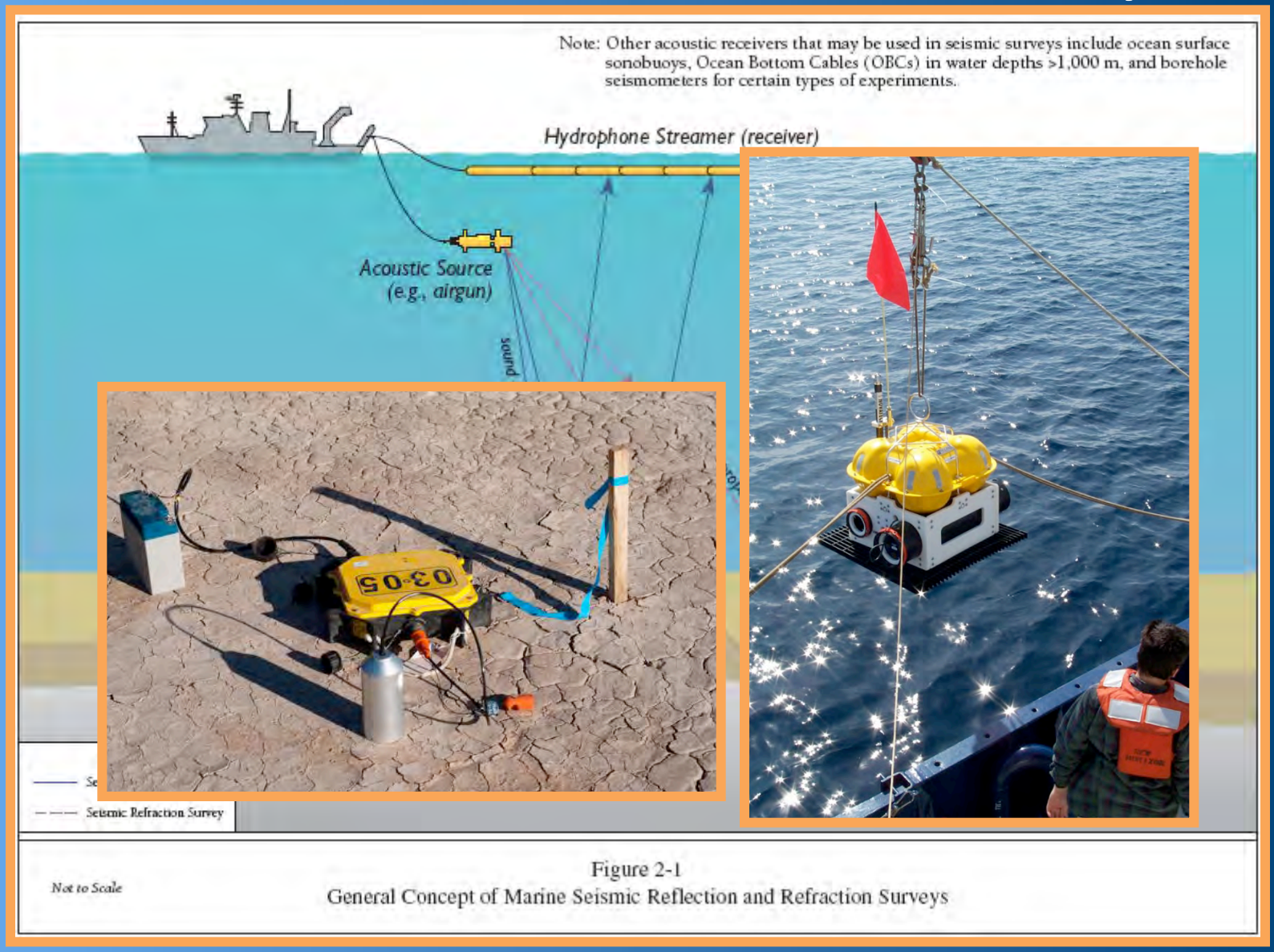


Illustration of airgun source acoustic signals reflecting off of the seafloor and underlying geologic discontinuities, and received by towed hydrophone streamers and ocean bottom seismometers.

Draft EA Analysis Approach

- Location
- Survey timing
- Source levels & configurations (number & type of airguns,2D, 3D, etc.)
- Modeling to predict Take Estimates
- Monitoring and mitigation measures
- Affected environment and environmental consequences of the proposed action
- Cumulative Impacts


Photo by NASA


By Charles Melville Scammon


Photo by Mike Baird

Proposed Action & Alternatives

- Proposed Action
- Alternatives Considered and Analyzed
  - Alternative 1 – No Action Alternative
  - Alternative 2 – Alternative Survey Timing
  - Alternative 3 – Restrict Survey to Daytime Operations
- Alternatives Eliminated from Further Analysis
  - Alternative 4 – Alternative Location
  - Alternative 5 – Different Survey Techniques
  - Alternative 6 – Survey Optimization

Monitoring & Mitigation

Standard Mitigation Measures:

- Mitigation during survey planning phases
- Visual monitoring
- Passive Acoustic Monitoring (PAM)
- Proposed Safety/Exclusion Zone
- Mitigation during Operations:
  - Vessel speed/course alteration
  - Airgun power down & shut down
  - Airgun ramp-up
  - Special mitigation measures for species of particular concern
  - Use of mitigation airgun during turns/transec

Additional Mitigation Measure:

Protected Species Observer on R/V Langseth Observer tower

Potential Environmental Impacts

Environmental Consequences:

- Direct and indirect affects of the proposed action would mainly be a result of noise from airguns
- Potential impacts to species would be expected to be limited to short-term and localized behavioral disturbances (such as Level B), and not significant to populations
- Proposed monitoring and mitigation measures influence results

Cumulative Impacts:

- Results indicate no significant cumulative effects to the affected environment from proposed actions

Coordination with other Agencies and Processes:

Southern California Collaborative Offshore Geophysical Surveys

Neal Driscoll and Graham Kent

SIO

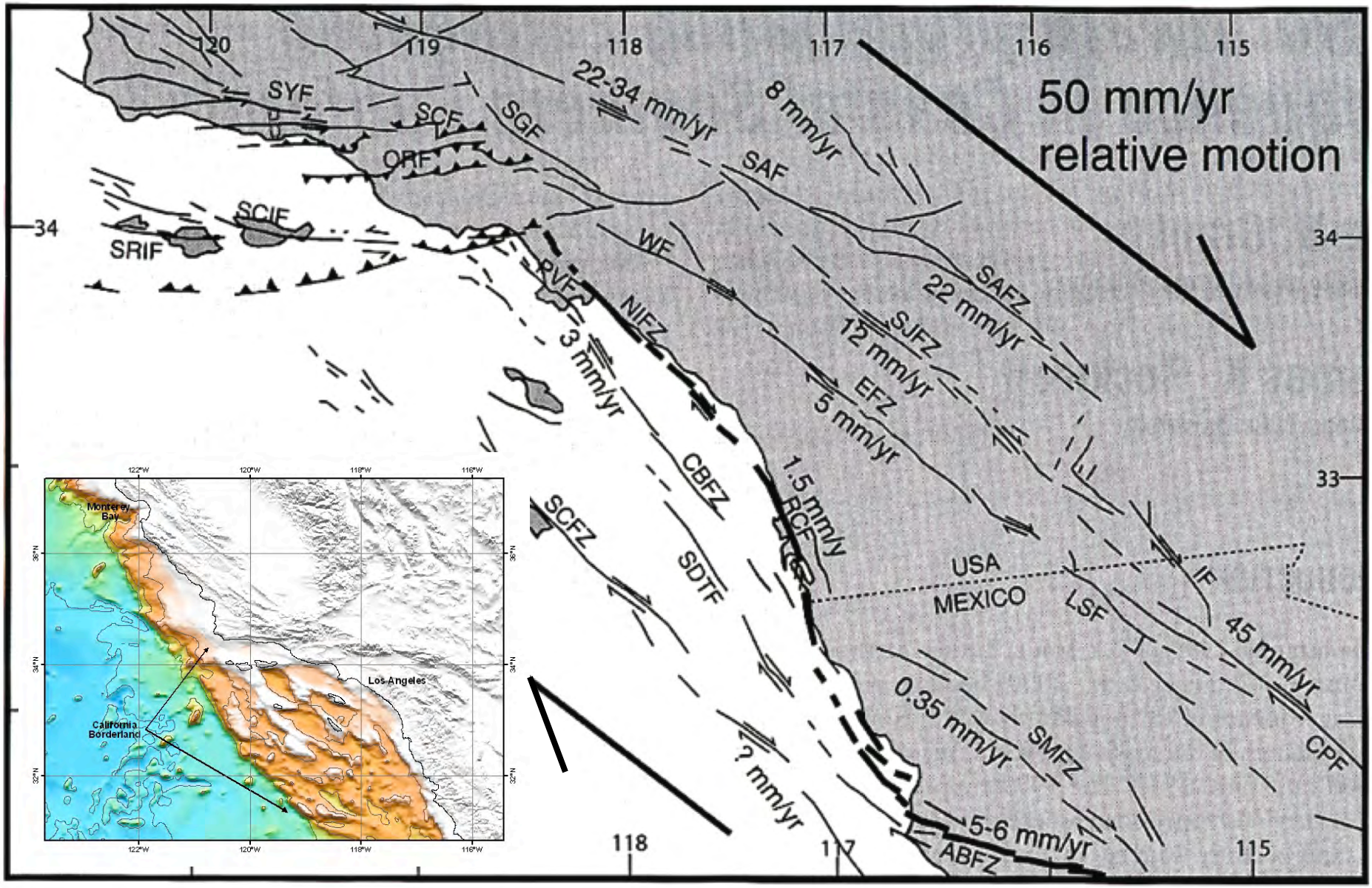
NEVADA

The proposed project has both scientific and societal relevance; the geophysical surveys will:

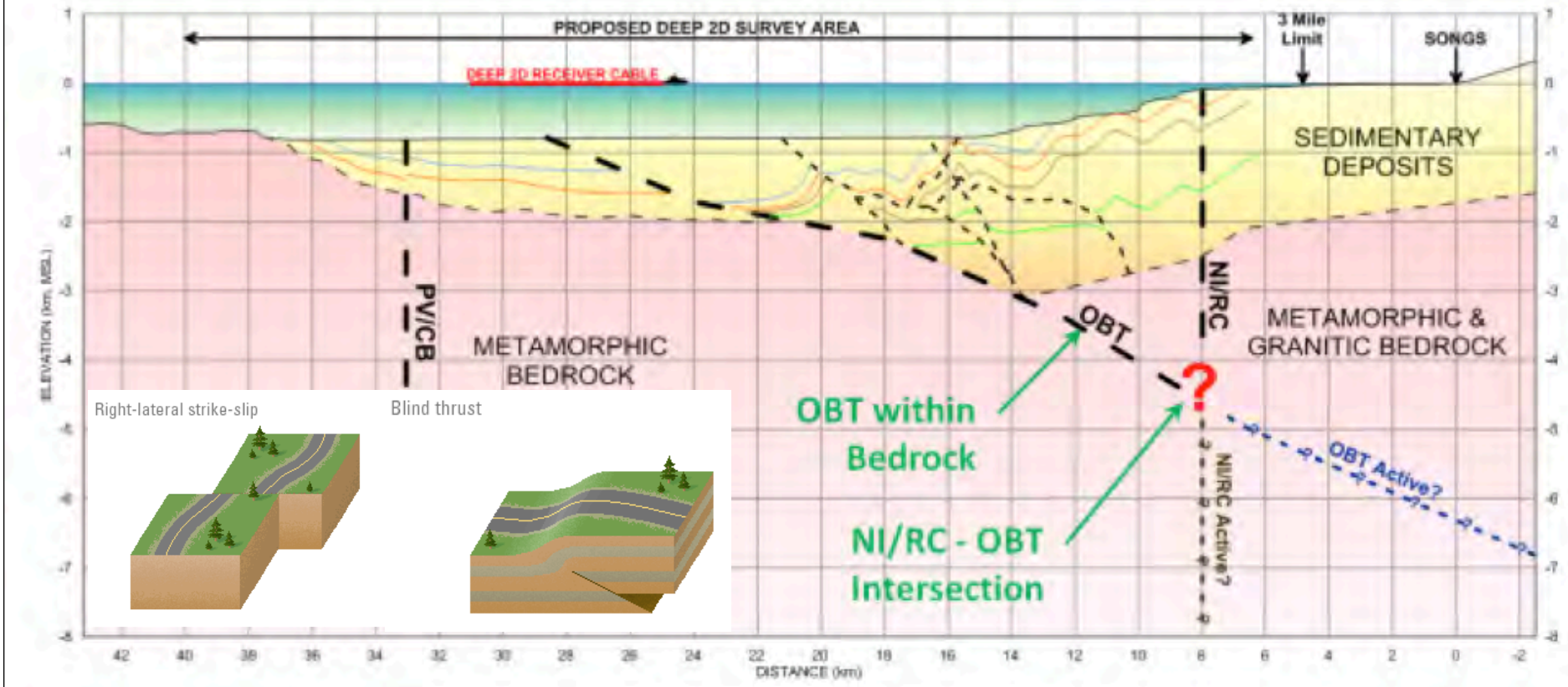
- constrain the geometry and architecture of the fault systems offshore and help evaluate fault models most capable of dominating future seismic ground motion at the San Onofre Nuclear Generating Station (SONGS)

- test isostatic predictions associated with margin reorganization (Brothers et al., 2012), which is a fundamental part of the plate tectonic cycle

Brothers, D. A. Harding, A. González-Fernández, W. S. Holbrook, G. Kent, N. Driscoll, J. Fletcher, D. Lizarralde, P. Umhoefer, and G. Axen, 2012. Farallon slab detachment and deformation of the Magdalena Shelf, southern Baja California. Geophysical Research Letters, Vol. 39, L09307


50 mm/yr
relative motion
22-34 mm/yr
8 mm/yr
SYF
SCF
SGF
ORF
SAF
SCIF
SRIF
WF
RVF
NIFZ
3 mm/yr
SAFZ
22 mm/yr
SJFZ
12 mm/yr
EFZ
5 mm/yr
1.5 mm/yr
RCF
CBFZ
SCFZ
SDTF
USA
MEXICO
LSF
IF
45 mm/yr
CPF
0.35 mm/yr
SMFZ
? mm/yr
5-6 mm/yr
ABFZ
Monterey Bay
Los Angeles
California Borderland
120
119
118
117
116
115
34
33

Objectives of Proposed Seismic Survey



To image fault geometry in the seismogenic zone and determine the recurrence interval for the fault systems as well as the magnitude of the most recent event (MRE)

NEPA Process

- Draft EA
  - Prepared Draft EA
  - Posted on NSF Website for Public Comment – 60 Days
  - Notice of Availability sent to Interested Parties and local newspapers
  - Public Hearing
- Final EA
  - Prepare Final EA
  - Post on NSF Website

Thank you!

Draft EA available on NSF Website:

http://www.nsf.gov/geo/oce/envcomp/index.jsp

*(**Final EA** will be available on same site when completed. This **presentation** will be posted next week.)*

NSF contact for more information and submitting written comments:

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Public Comment Period Closes: September 8